REMARKS

This is in response to the Official Action currently outstanding with regard to the above-identified application.

The present application was originally filed with Claims 1-28. As a result of Applicants' response to a Restriction requirement issued by the Examiner, Claims 9-11 and 18-28 have been withdrawn from further consideration in this prosecution. The present Request for Reconsideration does not seek the amendment, cancellation or addition of any claims. Consequently, Claims 1-8 and 12-17, as reproduced hereinabove for convenience of reference, constitute the claims currently under active prosecution in this application.

In the currently outstanding Official Action, the Examiner has:

1. Acknowledged Applicants' claim for foreign priority under 35 USC §119 (a)-(d) or (f), and has confirmed the receipt by the United States Patent and Trademark Office of the required certified copies of the priority documents for this application;

2. Indicated that the drawings filed with the application on 1 September 2000 are acceptable;

3. Accepted Applicants' election, without traverse, of claims 1-8 and 12-17 as originally filed on 27 September 2004 for further prosecution in this application, and withdrawn Claims 9-11 and 18-28 from further consideration pursuant to 37 CFR §1.142(b) as being drawn to non-elected groups, there being no allowable generic or linking claim;

4. Rejected claims 1-3, 5-8, 12-13 and 15-17 under 35 USC §103(a) as being unpatentable over Fukushima (US Patent No. 6,115,561); and

5. Objected to claims 4, and 14 as being dependent upon a rejected base claim, but indicated that the latter claims would be allowable if appropriately rewritten in independent form including all of the limitations of their respective base claims and any intervening claims.

Further comment regarding items 1-3 and 5 above is not deemed to be required in these Remarks.

With respect to item 4, Applicants respectfully submit that the Examiner's outstanding rejection of the claims currently pending in this application is based upon the erroneous belief that the characteristic features of the present invention would have been obvious for a person of ordinary skill in the art at the time that the present invention was made in view of the Fukushima (USP 6,115,561) reference. Consequently, Applicants respectfully submit that the characteristic features of the present invention are not disclosed, indicated, taught or suggested by the Fukushima reference. Indeed, the very wording of the Examiner's rejection appears to concede that this is the case, yet the Examiner nevertheless proceeds to reject the currently pending claims of this application anyway.

Specifically, in the currently outstanding Official Action, the Examiner's rejections of the presently pending claims are made on the basis of teachings of the present invention that ***she admits are not specifically*** present in the cited Fukushima reference upon which she relies. Thus, with respect to Claim 1 that calls for "an image forming section for forming a pattern chart having a plurality of patterns aligned thereon so as to suppress uneven concentration appearing depending upon the scale of an electrostatic potential difference", the Examiner states that "Fukushima does not directly teach that that gradation patterns are aligned thereon so a suppress an uneven concentration appearing depending upon a scale of electrostatic potential difference on the gradation patterns". Similarly, the Examiner also states that "Fukushima does not directly teach that the pattern chart is formed so as to prevent an intensified electric field caused by a potential boundary of an electrostatic latent image". Still further, the Examiner states: "Fukushima does not directly teach that the image processing means adjusts an image forming condition with reference to a base color of the recording pattern having the pattern chart formed thereon."

Applicants respectfully note in this regard that the Fukushima reference is directed to the solution of the situation that in an image forming apparatus, "it is difficult to satisfactory correct and control both short-term changes in the reproducibility of the density and gradation of the obtained image caused, for example, by change in environment, and long-term changes in the reproducibility of the density and gradation of the obtained image caused, for example, by change in the properties of the photosensitive member and the developer during the use of a long time period" (column 1, lines 24-38). In other words, the ***Fukushima reference specifically recognizes and attempts to correct the problem that the conventional art has had difficulty in correcting and controlling the reproducibility of the density and gradation in an image forming apparatus, in consideration of both short-term changes and long-term changes in certain of the operational parameters under which it operates***.

On the other hand, it is to be recognized that the present application recognizes and deals with, as one of the problems to which it is directed, the point that, if (i) the edge effect (i.e., when developed, a part such as an end of the gradation pattern, which rapidly changes its electrostatic potential, has a concentration higher than the original one) and (ii) responsivity in replenishing the toner to an electrostatic latent image is not appropriately considered in the art (i.e., it is not possible at all times to form a gradation pattern having suitable gradations). In addition, the present invention recognizes, and is directed to the solution of, the problem that if the foregoing factors are not appropriately considered, it also is not possible to read a concentration of the gradation pattern by the image reading means, thereby causing a resulting improper adjustment of the image forming apparatus. To solve these problems, the present invention provides an image forming apparatus, in which a chart of the gradation patterns is formed in view of an edge effect and responsivity in replenishing toner so as to achieve a more suitable reading concentration of the gradation pattern with the result that image forming conditions may be adjusted in a positive and appropriate manner.

In other words, unlike the Fukusima reference, ***the present application clearly and definitively recognizes and points out that one of the problems associated with the conventional art is that gradation patterns are not suitably formed on account of the edge effect and the responsivity in replenishing toner, and that these factors result in occasional undesirable decreases in the accuracy of the reading of the gradation patterns***.

Furthermore, the present invention also recognizes and addresses the problem that, when a degree of white (i.e., a "white level") of the recording member having the gradation patterns formed thereon is higher than a reading value of the reference whiteboard (which determines a zero level of the reading value), the base and the gradation pattern cannot achieve a suitable contrast for gradation correction. In this regard, the present invention provides an image forming apparatus in which, when reading the gradation pattern, correction in accordance with the degree of white of the base of the recording member having the gradation patterns thereon is carried out, so that a more suitable reading concentration of the gradation patterns is achieved thereby adjusting image forming conditions in a positive and appropriate manner.

In other words, also unlike the Fukusima reference, ***the present application specifically and definitively recognizes and addresses the problem that a gradation pattern may not be formed with a contrast suitable for gradation correction when the degree of white of the base of the recording member is improper, and that this may result in an undesirable decrease in the reading accuracy of the gradation pattern***.

Accordingly, Applicants respectfully submit that the problems identified and solved by the present application are totally different from the problems to which the Fukushima reference is directed.

Furthermore, in the image forming apparatus of the present application, an arrangement is adopted that eliminates the edge effect and improves the responsivity in replenishing the toner, both taking into consideration the fact that a main scanning direction is more susceptible to the edge effect than a sub-scanning direction, in claim 1, an image forming section forms "a pattern chart having a plurality of gradation patterns aligned thereon so as to suppress an uneven concentration appearing depending upon a scale of an electrostatic potential difference on the gradation patterns which are adjacent to each other in a sub-scanning direction of image formation".

Hence, the arrangement of elements in the present invention makes it possible to avoid irregularity in gradation patterns arising from the edge effect and the responsivity in replenishing the toner. In this manner, the image forming apparatus of the present application allows for suitable adjustment of the image forming conditions.

Also, in the present invention as recited in claim 12, when the image is a pattern chart having different gradation patterns aligned thereon, the image forming means is caused to form the gradation patterns in a manner that prevents intensified electric field(s) caused by potential difference(s) at a boundary of an electrostatic latent image on the gradation patterns which are adjacent to each other in a sub-scanning direction of the image forming means.

Moreover, in the present invention as recited in claim 16, the reading density of gradation patterns is made more appropriate than in the prior art by performing corrections in accordance with the degree of white of the base of the recording member on which the gradation patterns are formed. Consequently, the image processing means of the present invention performs image processing based upon (second) image information obtained by reading an image formed on the recording member, and adjusts the image forming conditions with reference to the actual base color of the recording member having the pattern chart formed thereon.

On the other hand, it will be understood that the Fukushima reference attempts to form full-color images having stable density and gradation by the performance of two types of image density/gradation control. More specifically, in accordance with a first image density/gradation control used in the forming of a test pattern on a sheet, the image forming apparatus of Fukushima sets (i) a contrast potential (the difference between each of the surface potentials of photosensitive drums when semiconductor lasers emit light having the maximum levels after primary charging, and the developing bias potential) such that an appropriate maximum density value is provided, and (ii) an LUT (Look Up Table) so as to provide an appropriate gradation characteristic.

Thereafter, in view of the result of the first image density/gradation control, the image forming apparatus steadily maintains the density of the reproduced image by appropriately controlling the toner concentration of the developer, by means of a second image density gradation control for forming a test pattern on the photosensitive drum (see First Embodiment, especially the descriptions from column 9, line 5).

In other words, the two types of image density/gradation control performed by the image forming apparatus of Fukushima ***never take account of (i) whether or not the test pattern formed on the sheet or the photosensitive drum is in an appropriate state, and (ii) whether or not the relationship between the degree of white of the base of the recording member(i.e. base color) and the reading value of the reference whiteboard is appropriate***. Indeed, the Fukushima reference evidences no recognition or awareness at all concerning the fact that there are cases in which the test pattern itself is not formed in an appropriate state, and in which the degree of the white level of the base of the recording member (i.e., the base color) is larger than the reading value of the reference whiteboard. Accordingly, in performing the version of image density/gradation control disclosed therein, the Fukushima reference never takes into consideration (i.e. evidences no technical recognition, awareness or solution) of the fact that the test pattern must be formed in an appropriate state, and the correction in reference to the base color of the recording member must be performed at the time of reading the gradation pattern.

Accordingly, for the reasons described above, Applicants respectfully submit that the present application and Fukushima are totally different from one another in terms of the problems to which they are directed, and further that each discloses completely different arrangements for achieving the positive and appropriate adjustment of the factors governing image forming (i.e. for performing image density/gradation control). In other words, although the present application and Fukushima reference share, in a very broad sense, the similar objectives (i.e., the appropriate correction of image density/gradation), the facts that the problems recognized and the means for solving those respective problems (i.e., the characteristic features of the present invention and of the Fukushima reference respectively) are totally different from one another. Therefore, Applicants respectfully submit that the present invention and the Fukushima reference are inapposite to one another (or, at best, the Fukushima reference can be accurately characterized only as background art to the present application).

The requirements that must be satisfied by the Examiner's rejection in order to establish a *prima facie* case of the obviousness of a claimed invention are well known and may be stated as follows:

> To establish a *prima facie* case of obviousness under Section 103, Title 35 United States Code (35 US §103), three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2D 1438 (Fed. Cir. 1991). (See, Manual of Patent Examining Procedure §2142 (8th Edition), at page 2100-2121, *et seq.*)

Applicants respectfully submit that these standards have not been met in this case. Thus, even though the present invention and the cited Fukushima reference may be said to have somewhat similar goals within the same field of endeavor those goals are not exactly the same, and it is nevertheless clear that "[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 USC 103". *In re Spaonnoble*, 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA, 1969) MPEP Sec 2141.02 (p. 2100,125). Further, "[T]he mere fact that the references ***can*** be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) MPEP 2143 p2100-131 Hence, Applicants respectfully submit that the Examiner's after the fact attempt to read the present invention into the cited reference is not appropriate. The cited reference had no realization of the problems addressed and solved by the present invention nor did it deal with those problems and solutions in any manner.

Accordingly, the Examiner's characterizations of what might be read into the prior art reference relied upon in view of Applicants' disclosure does not establish the obviousness of the present invention. That result could only be justified if the prior art taught or legitimately suggested the present invention to one of ordinary skill in the art which simply is not the case here.

For each and all of the foregoing reasons, Applicants respectfully submit that the Examiner's outstanding rejection is insufficient to render the currently pending claims of this application unpatentable under 35 USC 103(a). Accordingly, reconsideration, a decision so holding, and allowance of this application as it presently stands in view of the foregoing Amendment and Remarks in response to this communication is respectfully requested.

Applicants also believe that additional fees beyond those submitted herewith are not required in connection with the consideration of this response to the currently outstanding Official Action. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge and/or credit Deposit Account No. 04-1105, as necessary, for the correct payment of all fees which may be due in connection with the filing and consideration of this communication.

Respectfully submitted,

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